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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,417	10/12/2001	Stuart C. Hansen	10010582-1	9922

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EXAMINER

GURZO, PAUL M

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,417

Applicant(s)

HANSEN, STUART C.

Examiner

Paul Gurzo

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,7, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. ("A Novel Non-linear Ion Mirror with Only Three Elements", European Journal of Mass Spectrometry, Feb. 22, 2001), and further in view of Hanson (6,013,913).

Regarding claims 1,7, and 14, Zhang et al. teach a mass spectrometer comprising an ion source, flight tube, ion mirror with a front, middle, and rear electrode that receive the ions and creates an electric field which retards and reflects the ions, and an ion detector for receiving the reflected ions (page 515, col. 1 - page 516, col. 2, paragraph 1 and Figures 1a and 4b). They do not explicitly state that the ion mirror is integral to the flight tube. However, in the specification, Applicant teaches that "integral" refers to being disposed or positioned in or on, attached to, adapted for, integrated with, contacting or a permanent part of (page 5, lines 24-27). Using this definition, Hanson et al. depict, in Fig. 10, a reflectron (22) that is integrally connected to the flight tube (26). They state that the reflectron acts as an ion mirror (col. 3, lines 53-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a flight tube with the ion mirror because this will lead to efficient drifting of the ions.

Regarding claims 15 and 16, Zhang et al. depicts, in Fig. 4b, the claimed design wherein the inner surface comprises a portion between the ion source and the ion mirror as well as the front electrode faces the ions source and the ion detector faces the front electrode.

Claims 2-4, 6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. ("A Novel Non-linear Ion Mirror with Only Three Elements", European Journal of Mass Spectrometry, Feb. 22, 2001), in view of Hanson (6,013,913), and further in view of Park (6,469,295).

Regarding claims 2-4 and 8-10, the above-applied prior art does not explicitly teach the claimed materials for the electrodes and flight tube, but Park teaches that the electrodes are made of a conductive metal material (col. 6, line 63 - col. 7, line 3 and col. 24, lines 50-53). The use of gold, aluminum, etc. is well known types of metals, all of which can be used in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use these materials because they will produce the desired electric field.

Regarding claim 6, Zhang et al. teach that the preferred electric field can be created by applying distinct voltages at each electrode element (page 516, col. 1). They continue to teach that the electric field in the deceleration region can be chosen arbitrarily (page 516, col. 2). This teaches on the claimed relationship between the electric field strengths.

Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. ("A Novel Non-linear Ion Mirror with Only Three Elements", European Journal of Mass Spectrometry, Feb. 22, 2001), in view of Hanson (6,013,913), and further in view of Dowell (5,331,158).

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Regarding claims 5 and 11, the above-applied prior art does not explicitly state the claimed flight tube material, but Dowell teaches that the flight tube (12) can be constructed from metallized glass or gold-plated aluminum, ceramic, sapphire, glass, or quartz (col. 6, lines 13 - 31 and Fig. 1. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use these materials because they are well known and provide a free path for the ions to travel without interference.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Gurzo whose telephone number is (703) 306-0532. The examiner can normally be reached on M-Thurs. 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on (703) 308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

PMG
July 15, 2003


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 9-3